

38.3.4.3 Test T.3: Vibration, shock and charge

38.3.4.3.1 Introduction

ST/SG/AC.10/11/REV 2

A vibration, shock and charge test is designed to determine the ability of primary and rechargeable lithium cells and batteries to withstand vibration, shock and charging. This test is applicable to all batteries with nominal voltages up to the limits indicated in paragraphs 38.3.4.3.2.2.2 and 38.3.4.3.2.2.3. and to all cells.

38.3.4.3.2 Apparatus and materials

38.3.4.3.2.1 The following apparatus is required for this test: a vibration machine, a shock test apparatus, a resistor and a voltmeter. The shock test apparatus should be constructed to give a minimum average acceleration of 75 times the local acceleration due to gravity during the first 3 milliseconds and a peak acceleration of between 125 and 175 times the local acceleration due to gravity, e.g. apparatus to IEC 68-2-27.

38.3.4.3.2.2 The number and condition of cells and batteries to be tested are as follows.

38.3.4.3.2.2.1 Cells:

- (a) Ten primary cells which should be tested in the undischarged state.
- (b) Ten rechargeable cells which should be tested, at first cycle, in the fully charged state.
- (c) Ten rechargeable cells which should be tested, after cycling to reduce the capacity to 60% of the rated capacity, in the fully charged state.

38.3.4.3.2.2.2 Batteries containing component cells with a nominal voltage of less than 2 volts per component cell:

- (a) Four primary batteries with a nominal voltage of up to 6 volts which should be tested in the undischarged state.
- (b) Four rechargeable batteries with a nominal voltage of up to 6 volts which should be tested, at first cycle, in the fully charged state.
- (c) Four rechargeable batteries with a nominal voltage of up to 6 volts which should be tested, after cycling to reduce the capacity to 60% of the rated capacity, in the fully charged state.

38.3.4.3.2.2.3 Batteries containing component cells with a nominal voltage of 2 volts or greater per component cell:

- (a) Four primary batteries with a nominal voltage of up to 4 volts which should be tested in the undischarged state.
- (b) Four rechargeable batteries with a nominal voltage of up to 4 volts which should be tested, at first cycle, in the fully charged state.
- (c) Four rechargeable batteries with a nominal voltage of up to 4 volts which should be tested, after cycling to reduce the capacity to 60% of the rated capacity, in the fully charged state.

